

Faculty of Engineering, the Built Environment and Information Technology

Technology for tomorrow

If you want to be at the forefront of what's happening in engineering, construction or IT, then stick around because NMMU is where it's at. With top facilities, state-of-the-art technology, stimulating research and practical training, you have the opportunity to become one of the faculty's highly sought-after graduates, be it in engineering, information technology, quantity surveying or construction management. You're instantly employable with our technology for tomorrow.



School of Engineering

Department of Civil Engineering
Department of Electrical Engineering
Department of Industrial Engineering
Department of Mechanical Engineering
Department of Mechatronics

School of the Built Environment

Department of Construction Management
Department of Building & Quantity Surveying

School of Information and Communication Technology

Department of Applied Informatics
Department of Information Technology

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George Campus: 044 801 5111

Faculty officers:

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School of the Built Environment: 041 504 3480
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SCHOOL OF ENGINEERING

The School of Engineering offers programmes in the fields of civil, electrical, mechanical, and industrial engineering, mechatronics, and operations management & quality. NMMU is the only higher education institution offering the BEng and MEng (Mechatronics) programme in the Eastern Cape, and hence is making a valuable contribution to the development of related industries, such as the automotive manufacturing and related supplier industries. The school also houses the Friction Processing Research Institute (FPRI) that offers strategic research opportunities as well as research in areas such as manufacturing systems, materials and material modelling, intelligent manufacturing and robotics, and technology management. All the graduate academic engineering programmes in NMMU's School of Engineering are accredited by the Engineering Council for South Africa (ECSA).

Qualification	Programme overview	Delivery mode & duration of study	APS	Admission requirements	APS testing band	Career opportunities
Diploma (Dip)						
Dip (Civil Engineering)	<p>This programme consists of two years of full-time study at NMMU and one year in industry undergoing experiential training.</p> <p>Take note: After completion of the diploma and a minimum of three years' industrial experience a candidate may apply to the Engineering Council of South Africa (ECSA) for registration as a technician.</p>	Full-time 3 years	34	<ul style="list-style-type: none"> Minimum statutory NSC requirements for diploma entry must be met. English, Afrikaans or isiXhosa (home language or first additional language) on at least a level 3 (40-49%). Mathematics 4 (50-59%). Physical Sciences 4 (50-59%). <p>RECOMMENDED NSC SUBJECTS: Engineering Graphics & Design</p>	26 - 33	<p>Civil engineering technician.</p> <p>Employment opportunities exist at consulting engineering practices, construction companies, government departments such as the Department of Water Affairs and the National Roads Agency, at organisations such as Spoornet and Eskom, and at municipalities and provincial public works departments. Employment in these organisations may involve design and construction work, as well as maintenance work.</p>
Dip (Industrial Engineering)	<p>This programme is designed to enable students to solve well-defined problems and improve systems in both the manufacturing and service sectors of industry. This results in higher productivity, better quality products and services for on-time delivery to customers.</p> <p>The programme consists of four semesters of academic training and two semesters of experiential training.</p> <p>Take note: After completion of the diploma and a minimum of three years' industrial experience a candidate may apply to the Engineering Council of South Africa (ECSA) for registration as a technician.</p>	Full-time 3 years	34	<ul style="list-style-type: none"> Minimum statutory NSC requirements for diploma entry must be met. English, Afrikaans or isiXhosa (home language or first additional language) on at least a level 3 (40-49%). Mathematics 4 (50-59%). Physical Sciences 4 (50-59%). 	26 - 33	<p>Industrial engineering technicians find career opportunities mostly in the manufacturing industry, but also in the service industry, where the industrial engineering technician and technologist play an important role in the engineering team.</p>
Dip (Mechanical Engineering)	<p>The principle of mechanical engineering is to apply technology to design products, machines and equipment, to create means of production, and to maintain the production methods. Persons achieving this qualification will be able to integrate analytical and practical engineering techniques and engineering knowledge to solve well-defined and open-ended problems.</p> <p>Take note: After completion of the diploma and a minimum of three years' industrial experience a candidate may apply to the Engineering Council of South Africa (ECSA) for registration as a technician.</p>	Full-time 3 years	34	<ul style="list-style-type: none"> Minimum statutory NSC requirements for diploma entry must be met. English, Afrikaans or isiXhosa (home language or first additional language) on at least a level 3 (40-49%). Mathematics 4 (50-59%). Physical Sciences 4 (50-59%). <p>RECOMMENDED NSC SUBJECTS: Engineering Graphics & Design</p>	26 - 33	<p>Mechanical engineering technicians find career opportunities at private and public companies, engineering workshops, motor manufacturers, food and pharmaceutical factories, chemical, transport and mining companies, municipalities, military, government departments and research organisations.</p>

Qualification	Programme overview	Delivery mode & duration of study	APS	Admission requirements	APS testing band	Career opportunities
Dip (Electrical Engineering) Extended Curriculum	<p>This programme provides alternative university access to students who have the potential to succeed, but do not meet the minimum admission requirements for the mainstream programme.</p> <p>The purpose of the programme is to integrate additional academic support and skills development with mainstream courses in order to assist students in the successful completion of the relevant diploma course.</p>	Full-time 4 years		<ul style="list-style-type: none"> Minimum statutory NSC requirements for diploma entry must be met. In exceptional cases however candidates who only meet the minimum NSC requirements for certificate entry may be considered. Mathematics 3 (40-49%). Physical Science 3 (40-49%). Candidates must perform satisfactorily in the NMMU access assessment test. 	26 - 33	See career opportunities for the relevant diploma programme.
Dip (Electrical Engineering)	<p>Persons achieving this qualification will be competent to apply engineering principles and problem-solving techniques in the field of electrical engineering by operating within relevant standards and codes.</p> <p>Take note: After completion of the diploma and a minimum of three years' industrial experience a candidate may apply to the Engineering Council of South Africa (ECSA) for registration as a technician.</p>	Full-time 3 years	34	<ul style="list-style-type: none"> Minimum statutory NSC requirements for diploma entry must be met. English, Afrikaans or isiXhosa (home language or first additional language) on at least a level 3 (40-49%). Mathematics 4 (50-59%). Physical Sciences 4 (50-59%). <p>RECOMMENDED NSC SUBJECTS: Engineering Graphics & Design and/or Information Technology.</p>	26 - 33	Electrical engineering technicians find employment in industries, factories, mines, test laboratories, municipal generation and distribution departments, Eskom, transport services, design and research offices, and at consulting engineering companies.
Specialisation areas:						
Power	The student specialising in power systems will be prepared for a multitude of career opportunities in industry (design, installation and maintenance of power systems), consulting (electrical project management), research and development, and entrepreneurship.					
Industrial	The layout of the industrial course is such that candidates will have a broad-based knowledge in electrical engineering, power systems engineering and computer engineering. The combination of these skills empowers the diplomate to be successful in the industrial/manufacturing environment.					
Electronic Communication	A person who specialises in the field of electronic communications will be equipped with the necessary skills to compete in the ever-advancing and dynamic field of communications and engineering, and work in an industry that encompasses the exciting world of telemetry, measurement and control. Qualified technicians can also work in areas that specialise in transmission and receiving of data in the form of electrical signals and communications.					
Computer	This programme will enable students to recognise and utilise hardware and electronic devices, to circuit designs in this field, programme applications in familiar theoretical computer languages, as well as to develop applications in other computer languages. Students will also be enabled to perform general tasks in the field of hardware, software and network applications. This programme does not only cover electrical engineering content, but also industry standard qualifications and computer-related course material, which includes networking skills (using the CISCO Networking Academy programme).					
Dip (Operations Management)	This programme will provide students with skills and knowledge to develop as high quality managers in all spheres of production, operations and management.	Part-time 3 years	30	<ul style="list-style-type: none"> Minimum statutory NSC requirements for diploma entry must be met. English, Afrikaans or isiXhosa (home language or first additional language) on at least a level 3 (40-49%). Mathematics 3 (40-49%) or Mathematical Literacy 5 (60-69%). Full-time employment in a related field. 	22 - 29	Career opportunities include: production planners, operations managers, supervisors, team leaders, work study practitioners, quality practitioners, operations analysts, logistics and stores managers.
Bachelor of Technology (BTech) (The BTech degree forms the fourth year of study after completing the diploma)						
BTech (Civil Engineering)	<p>This programme provides students with the skills and knowledge to work as highly-trained professionals in one of the following fields:</p> <ul style="list-style-type: none"> Urban engineering Water engineering Transportation engineering Environmental engineering <p>The tuition of these disciplines is subject to sufficient student numbers, and availability of sufficient resources.</p> <p>Take note: After completion of the BTech and a minimum of three years' industrial experience a candidate may apply to the Engineering Council of South Africa (ECSA) for registration as a professional engineering technologist.</p>	Part-time 2 years (block format)		Dip (Civil Engineering) or equivalent qualification with two year post-diploma work experience or a 65% average in applicant's level III subjects.		Civil engineering technologist.

Qualification	Programme overview	Delivery mode & duration of study	APS	Admission requirements	APS testing band	Career opportunities
BTech (Electrical Engineering)	Persons achieving this qualification will be competent to professionally apply electrical engineering principles, innovative skills, advanced problem solving techniques and managerial skills in the field of electrical engineering. Take note: After completion of the BTech and a minimum of three years' industrial experience a candidate may apply to the Engineering Council of South Africa (ECSA) for registration as a professional engineering technologist.	Full-time 1 year Part-time 2 years		Dip (Electrical Engineering) with appropriate Level 3 subjects. An overall average of 65% at the exit level.		Electrical engineering technologist.
BTech (Industrial Engineering)	This programme provides students with the skills and knowledge to analyse, design and improve manufacturing and related services. Take note: After completion of the BTech and a minimum of three years' industrial experience a candidate may apply to the Engineering Council of South Africa (ECSA) for registration as a professional engineering technologist.	Full-time 1 year Part-time 2 years		Dip (Industrial Engineering) with appropriate Level 3 subjects. An overall average of 65% at the exit level.		Career opportunities are mostly in the manufacturing industry where the industrial engineering technician or technologist plays an important role in the engineering team.
BTech (Mechanical Engineering)	Persons achieving this qualification will be able to independently integrate mechanical engineering principles, apply these to determine appropriate ways of approaching activities and establish and use criteria to judge processes and outcomes. Take note: After completion of the BTech and a minimum of three years' industrial experience a candidate may apply to the Engineering Council of South Africa (ECSA) for registration as a professional engineering technologist.	Full-time 1 year Part-time 2 years		Dip (Mechanical Engineering) with appropriate level 3 subjects. An overall average of 65% at the exit level.		Mechanical engineering technologist.
BTech (Operations Management)	This programme enables students to acquire dynamic management skills to ensure smooth operation within manufacturing concerns.	Part-time 1 year		Dip (Operations Management) or a relevant qualification. An overall average of 65% at the exit level. Students may be required to complete a bridging programme in the case of equivalent qualifications.		Various operations management related positions.
BTech (Quality)	This programme enables students to determine the effectiveness of the quality system, appraising the current quality problem areas or potential areas, as well as to assist in the correction of problem areas. Students will also have the ability to improve product and/or service quality in cooperation with other departments in organisations.	Part-time 2 years		A relevant three-year diploma or any equivalent qualification. Mathematics I or equivalent. Students must be employed in a relevant field in order to register for Project IV.		Quality assurance management, quality control, production management, inventory management, process engineering, laboratory management, testing and inspection manufacturing, etc.
Bachelor of Engineering (BEng)						
BEng (Mechatronics)	Mechatronic engineering is a combination of precision mechanical engineering, electronics and computer systems. A typical mechatronic system is characterised by close integration of the mechanical components, electrical sensors, mechanical and electrical actuators and computer controllers into products and systems useful to society. In order to combine all these elements in an optimal way, mechatronic engineers must have insight in each of these disciplines. The programme provides students with a thorough grounding in mathematics, basic sciences, engineering sciences, engineering modelling and engineering design together with the abilities to enable application in fields of emerging knowledge.	Full-time 4 years	38	<ul style="list-style-type: none"> Minimum statutory NSC requirements for degree entry must be met. English, Afrikaans or isiXhosa (home language or first additional language) on at least a level 3 (40-49%). Mathematics 5 (60-69%). Physical Sciences 4 (50-59%). <p>RECOMMENDED NSC SUBJECTS: Engineering Graphics & Design and/or Information Technology.</p>	Must meet APS directly	Mechatronic engineers play a key role in the design, development, manufacture and operation of a variety of products – from video players and automatic cameras, to robots and fully-automated plants for manufacturing, packaging, and the process industries.

SCHOOL OF THE BUILT ENVIRONMENT

The School of the Built Environment offers a wide range of diploma and degree programmes to prepare students for the building and construction industry. Candidates can choose from programmes in the areas of construction science and technology, construction economics, construction management and quantity surveying. The quality of the programmes is recognised by the professional bodies of the building industry and evidence proves that NMMU graduates are sought-after in the profession. Graduates excel as leaders in the industry, nationally and internationally

Qualification	Programme overview	Delivery mode & duration of study	APS	Admission requirements	APS testing band	Career opportunities
Diploma (Dip)						
Dip (Building)	Two years of this three-year programme are spent doing full-time study at NMMU and one year in industry undergoing experiential learning.	Full-time 3 years	30	<ul style="list-style-type: none"> Minimum statutory NSC requirements for diploma entry must be met. English, Afrikaans or isiXhosa (home language or first additional language) on at least a level 3 (40-49%). Mathematics 3 (40-49%) or Mathematical Literacy 5 (60-69%). <p>RECOMMENDED NSC SUBJECTS:</p> <ul style="list-style-type: none"> Engineering Graphics & Design Design Physical Sciences Admission is subject to departmental selection.	22 - 29	This programme prepares diplomates for supervisory and middle management level employment in the building industry; and technical support level in the quantity surveying profession.
Bachelor of Technology (BTech) (The BTech degree forms the fourth year of study after completing the diploma)						
BTech (Construction Management)	This programme provides specialised training for middle and top management positions in the construction and related industries.	Full-time 1 year; can be split over 2 years		Dip (Building) or similar qualification (subject to departmental approval). Prospective students may be required to complete an oral examination. An average of at least 60% for all subjects in the final year of study in the diploma programme. At least 60% for the major module (Construction Management 3) in the final year of study in the diploma programme and One year proven post-diploma experience in the building industry or The submission of a detailed breakdown of any previous experience gained in the building industry will be considered on merit.		Employment opportunities exist mostly with private building contractors as well as with local authorities and state departments.
BTech (Quantity Surveying)	This programme provides specialised training for middle and top management level positions in the construction and related industries; and for practice in the quantity surveying profession.	Full-time 1 year; can be split over 2 years		Dip (Building) or similar qualification (subject to departmental approval). Prospective students may be required to complete an oral examination. An average of at least 60% for all subjects in the final year of study in the diploma programme. At least 60% for the major module (Quantity Surveying 3) in the final year of study in the diploma programme and One year proven post-diploma experience in the building industry or The submission of a detailed breakdown of any previous experience gained in the building industry will be considered on merit.		Employment opportunities exist mostly with construction companies, quantity surveying firms, financial institutions, local authorities and state departments.

Qualification	Programme overview	Delivery mode & duration of study	APS	Admission requirements	APS testing band	Career opportunities
Bachelor of Science (BSc)						
BSc (Construction Economics)	<p>Students are introduced to the following fields of expertise related to the construction industry: construction methods and materials; costs of various construction elements and components; the influence of the economy on the industry; rights and obligations of different parties; the use of computers and the principles of entrepreneurial success; personal and professional ethics; and general professional practice and management.</p> <p>Take note: <i>The BSc (Construction Economics) is followed by the BSc Honours (Quantity Surveying) in order to develop the additional expertise needed to qualify as a quantity surveyor.</i></p>	Full-time 3 years	36	<ul style="list-style-type: none"> Minimum statutory NSC requirements for degree entry must be met. English, Afrikaans or isiXhosa (home language or first additional language) on at least a level 3 (40-49%). Mathematics 4 (50-59%). <p>RECOMMENDED NSC SUBJECTS:</p> <ul style="list-style-type: none"> Engineering Graphics & Design Physical Science <p>Admission is subject to departmental selection.</p>	26 - 35	<p>Quantity surveyors function as construction economists and cost management consultants. They act as financial consultants to the construction and property development industries.</p> <p>In addition to working as consultants in private practice, quantity surveyors' skills are also utilised in areas such as shipbuilding, hotel management, civil engineering construction, property (asset) management, mining, government administration and financial planning.</p>
BSc (Construction Studies)	<p>This programme enables graduates to perform technical, supervision and operational and middle management functions in small to large construction-related enterprises, as employees or as entrepreneurs. They will obtain knowledge and skills in the areas of construction materials, methods and management, accounting, economics and the measurement and quantification of construction resources.</p> <p>Take note: <i>After completing the BSc (Construction Studies) graduates should enrol for the BSc Honours (Construction Management) in order to register as a candidate construction manager with the South African Council for the Construction and Project Management Professions upon graduating.</i></p>	Full-time 3 years	36	<ul style="list-style-type: none"> Minimum statutory NSC requirements for degree entry must be met. English, Afrikaans or isiXhosa (home language or first additional language) on at least a level 3 (40-49%). Mathematics 4 (50-59%). <p>RECOMMENDED NSC SUBJECTS:</p> <ul style="list-style-type: none"> Engineering Graphics & Design Physical Sciences 	26 - 35	<p>Graduates find employment in construction enterprises as site agents, site managers, contract managers, estimators, planners, managers and directors. Career opportunities also exist in materials manufacture and marketing, property management, property development, facilities management, subcontracting, specialist consulting, project management, lecturing and research.</p>

SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY

The School of Information and Communication Technology offers diploma and degree programmes in three specialisation areas; software development, support services and communication networks. The vision of the school is to be the leading provider of the state-of-the-art information and communication technology expertise in South Africa. The programmes at the school are designed to give you a world-class grounding in the fundamental principles underlying your chosen field of study. A significant proportion of the tuition time is spent in the schools modern, well-equipped laboratories, thus emphasising the practical and applied nature of the subject matter. The school consists of two departments, namely the Department of Information Technology and the Department of Applied Informatics.

Certificate (Cert)						
Cert (Geographic Information Systems)	<p>The GIS certificate is a distance learning study programme that is designed for individuals who are unable to attend full-time educational courses because of their responsibilities. The programme is primarily aimed at novices in GIS or those wishing to refresh their skills. The programme will take the student from the introduction to the principles of GIS and analysis of the types, sources and storage of spatial data through to the practical implications of GIS and design of a commercial or industrial solution using the techniques learned.</p>	Part-time 1 year		<p>Entrance is subject to selection by the department. This qualification is open to matriculants or graduates in any field. Candidates with a NSC must meet the minimum statutory requirements for higher certificate entry.</p> <p>For further information please contact the Spatial Technologies Unit on 041 504 3938.</p>		<p>This certificate will expand your skills to enable the use of GIS in your existing work environment.</p>
Higher Certificate (HCert)						
HCert: ICT (User Support Services)	<p>The purpose of the qualification is to produce graduates who are productive, competent, able to work independently, and who can manage time effectively in entry-level technical user support positions that span a wide range of computing environments requiring support personnel.</p> <p>Please note: <i>An average of 60% for all modules at the exit level is required if an applicant wishes to proceed to the Diploma: IT (Support Services).</i></p>	Full-time 1 year	26	<ul style="list-style-type: none"> Minimum statutory NSC requirements for higher certificate entry must be met. English, Afrikaans or isiXhosa (home language or first additional language) on at least a level 3 (40-49%). Mathematics 2 (30-39%) or Mathematical Literacy 3 (40-49%). <p>Admission is subject to departmental selection.</p>	22 - 25	<p>Entry-level IT support technician</p>

Qualification	Programme overview	Delivery mode & duration of study	APS	Admission requirements	APS testing band	Career opportunities
Diploma (Dip)						
Dip: IT (Software Development)	Students will be taught to effectively solve business-related problems, and will be trained extensively in areas such as computer software, computer hardware, networks and the analysis, design and implementation of software solutions.	Full-time 3 years	30	<ul style="list-style-type: none"> Minimum statutory NSC requirements for diploma entry must be met. English, Afrikaans or isiXhosa (home language or first additional language) on at least a level 3 (40-49%). Mathematics 2 (30-39%) or Mathematical Literacy 4 (50-59%). <p>RECOMMENDED NSC SUBJECTS: Computer Applications Technology or Information Technology</p>	22 - 29	Programmer or software engineer, systems analyst, user support specialist, network administrator.
Dip: IT (Communication Networks)	The communication networks stream focuses on integrating many technologies varying from wireless networks, voice-over IP, electronics, robotic components, computer and information security, networking and also programming. This course is primarily a course for networking professionals with a solid grounding in supporting subject areas such as programming and fundamentals of electronics.	Full-time 3 years	30	<ul style="list-style-type: none"> Minimum statutory NSC requirements for diploma entry must be met. English, Afrikaans or isiXhosa (home language or first additional language) on at least a level 3 (40-49%). Mathematics 3 (40-49%). <p>RECOMMENDED NSC SUBJECTS: Computer Applications Technology or Information Technology</p>	22 - 29	The communication network specialist would typically play an integral role in network and communication infrastructure design for multidisciplinary environments. With the exponential growth in the tele-communications infrastructure worldwide, professionals in this field will play a major role in future developments.
Dip: IT (Support Services)	This programme focuses on the day-to-day administration of the IT infrastructure and support of the users reliant on this infrastructure.	Full-time 3 years	30	<ul style="list-style-type: none"> Minimum statutory NSC requirements for diploma entry must be met. English, Afrikaans or isiXhosa (home language or first additional language) on at least a level 3 (40-49%). Mathematics 2 (30-39%) or Mathematical Literacy 4 (50-59%). <p>or HCert: ICT (User Support Services) with an average of 60% or above.</p> <p>RECOMMENDED NSC SUBJECTS: Computer Applications Technology or Information Technology.</p>	22 - 29	IT support technician or trainee call centre manager. Employers include: government departments, computer manufacturers, network organisations, computer bureau, research organisations, insurance companies, commerce and industry, educational institutions, professional firms, mining companies, libraries.
Bachelor of Technology (BTech) (The BTech degree forms part of the fourth year of full-time study after completing the diploma)						
BTech (Information Technology)	<p>The aim of the qualification is to provide students with an in-depth theoretical and practical foundation to prepare them for successful careers in information technology.</p> <p>Students may choose to follow a curriculum in one of the following specialisation areas:</p> <ul style="list-style-type: none"> Software development Communication networks <p>The BTech (Information Technology) forms the fourth year of study and offers a high degree of specialisation.</p>	Full-time 1 year		Diploma or equivalent qualification in information technology. Students must satisfy the prerequisites for the specified specialisation areas of the BTech programme.		<p>BTech (IT) students will typically be employed in IT/IS management positions, both in the private and public sectors.</p> <p>They are essentially prepared for positions such as systems analysts, programmers and network designers. The BTech also prepares students for postgraduate and industrial research.</p>